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U.S. MOX TO BE FABRICATED AT UNSAFE FRENCH CADARACHE PLANT

NIRS Southeast Office has filed a petition to the U.S. Nuclear Regulatory Commission to intervene in Duke Energy's bid to modify the operating licenses of four reactors near Charlotte, North Carolina, in order to test sample MOX fuel that would be made in France. If Duke is successful, the NRC would allow any one of the Catawba-1 & -2 and McGuire-1 & -2 reactors to be used to test four sample assemblies, or "lead test assemblies" (LTAs) to be made of US weapons grade plutonium. NIRS cited a number of environmental and safety concerns that would impact people living in the Charlotte area. The test assemblies are to be manufactured at the unsafe Cadarache MOX plant in France.

(593.5543) NIRS Southeast / WISE Amsterdam – The MOX testing is part of the Department of Energy's (DOE) plutonium disposition program. Under that plan, weapons grade plutonium from nuclear weapons will be used in Mixed Oxide (MOX) fuel.

Both the U.S. and Russia agreed to dispose of 32 MT of weapons plutonium each. Until 2002, the U.S. had chosen for the "dual track" option: 25.6 tons of plutonium would be used as MOX and 8.4 tons would be immobilized (instead of re-use in reactors it would be mixed with glass).(1)

In April 2002, the U.S. government decided to terminate the immobilization track in favor of the (more expensive) "single track" MOX option. A joint venture of Duke Energy, Cogema and Stone & Webster, chosen in 1999 to develop industrial scale MOX fabrication, is now charged with a larger MOX disposition program than earlier anticipated.(2)

The MOX plant is to be built at DOE's Savannah River Site complex in South Carolina at a cost of US$ 2 billion or more. There is big opposition to the plans for the dangerous MOX facility.(3)

Since the US MOX factory has not yet been approved or built, Duke and their associates Cogema and Stone & Webster are seeking additional approvals to make the sample test fuel assemblies in France. The test fuel may be moot since challenges continue to the construction of the Savannah MOX fuel factory.

DOE must supply the weapons grade material in order for the test to be representative of the MOX fuel that would be used in the Duke reactors. More than 150 kilograms of weapons grade plutonium would be shipped to France under this proposal – enough for at least 50 high-yield nuclear weapons. The transport would be via truck in continental U.S. and by ship across the global commons.

To top it off, a French plutonium fuel factory (Cadarache) that has been recently closed due to safety considerations will be reopened to make the experimental fuel.

Because of the inability to manufacture the test assemblies in the U.S., contacts were made with European MOX fabricators in Belgium and France. The plans first focused on Belgonucleaire's P0 plant in Dessel, Belgium. But as a result of the complex and shifting politics of the Belgian government, Belgium's prospects faded over the past year.(4)

In July 2002, the indefinite delay of the Belgian government decision on the issue turned the focus on the "ATPe" plant at Cadarache, France. On 12 August, Duke, Cogema and Stone & Webster awarded the contract for the test assemblies to Cogema Cadarache.(5) The French ministries of Foreign Affairs and Industry have given their approval but before fabrication safety

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authorities still have to give their permission.(6)

But the French government and operator Cogema have decided on the definitive closure of the old plant by 31 July 2003, in particular due to its poor anti-seismic design standards. With the current plan to manufacture the MOX test assemblies for Duke, the unsafe Cadarache facility now seems to restart its work.(7) (8)

"If the French facility is unsafe for further handling of European plutonium, how can it possibly be safe for processing U.S. military plutonium?", asked Tom Clements of Greenpeace International.

In addition to environmental concerns of shipment, the recent arrest in Morocco of a suspected terrorist who said that French plutonium transports were a target has increased concern over the shipment. "To go forward with this transport, which would be DOE's equivalent of saying 'bring 'em on', constitutes reckless behavior and must be stopped".(9)

The plan to send U.S. plutonium to France was spot lighted in a letter from NIRS and Greenpeace International to U.S. Secretary of Energy, Spencer Abraham, and endorsed by 62 concerned organizations calling on DOE to obey the law and conduct a complete environmental, security and liability review of the entire "euro fab" option for the test MOX fuel. The groups signing the letter included 39 from the U.S. and 23 from other countries, including France and Russia.(10)

According to the groups, a supplemental Environmental Impact Statement (SEIS) is necessary for the overseas production of test fuel. The original plans assumed test fuel production in the U.S. and were included in the EIS earlier prepared on the plutonium disposition program.

The move to Europe constitutes a "significant" change to the earlier proposal and DOE is thus obligated under the National Environmental Policy Act (NEPA) to prepare a Supplement to the EIS.

"Given the potential impact to the environment in case of an accident or terrorist incident, DOE must not be allowed to only prepare the cursory, secret document that it is now considering"

DOE apparently is now trying to prevent too much public input and intends to prepare only a "Supplement Analysis" (SA), which according to NEPA regulations, can be prepared without public notice or input. "Given the potential impact to the environment in case of an accident or terrorist incident, DOE must not be allowed to only prepare the cursory, secret document that it is now considering", said Clements.(11)

Duke's attempt to gain approval to test MOX fuel has also been challenged by Blue Ridge Environmental Defense League (BREDL), represented by Diane Curran and expert Dr. Edwin Lyman.

If approved, Duke would load the test fuel in 2005 and irradiate it for 2 - 3 cycles, with hopes of beginning to load up to 40% MOX into each of the four reactors in 2008.(12)

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Contact: NIRS Southeast

25 YEARS AGO

NIRS and WISE both celebrate their 25th anniversaries this year. This is the twelfth article in a series, "25 years ago", comparing anti-nuclear news "then" and "now", to mark our first quarter-century of anti-nuclear campaigning.

Then

In issue 3 of *WISE Bulletin* we wrote about plans for a big multinational fuel cycle plant in the Pacific: "The United States and Japanese nuclear authorities are planning a multinational nuclear fuel cycle facility in the U.S. Trust Territory of Micronesia. [...] The likely location is the so far unspoiled island of Palau. [...] The 'facility' would be under the joint control of the US and Japan and include uranium enrichment, reprocessing and waste disposal". (*WISE Bulletin*, December 1978)

Now

In 1980, Palau passed the world's first national constitution outlawing toxic, chemical, biological and radioactive weapons and material on its soil. Palau became independent in 1994. (*WISE News Communique*, 24 June 1994)

A number of other proposals have existed for nuclear waste disposal sites in the Pacific region. In the 1970s the U.S. government studied the possibilities for an international disposal site at the island of Palmyra, northeast Pacific. The Americans would be willing to pay about US$ 20 million to buy the island and store 10,000 tons of nuclear waste. Three brothers that owned the island were reluctant to sell it and considered Palmyra unsuitable because of unstable climate conditions. (*NRC* (NL), 25 August 1979)

In the late 1980's, plans existed to store waste at the Marshall Islands of Bikini and Enewetok, which had been in use as U.S. nuclear weapons testing sites. Total costs of the dump site was estimated at US$ 1.5 billion. (*Pacific Daily News*, 20 December 1987; *Pacific Island Monthly*, June 1994)

In 1995, the *U.S. Fuel and Security Services*, founded by a former U.S. intelligence chief and ex-secretary of state, focused again on Palmyra to realize an international storage site for spent fuel. (*Der Spiegel* (FRG), 20 May 1996)

The U.S. Fuel and Security Services apparently was changed into the U.S. Nuclear disarmament Services, which selected both Palmyra and Wake Island to store spent fuel (as much as 200,000 tons) and excess weapons' plutonium. (*Die Tageszeitung* (FRG), 8 April 1997)

Countries in the Pacific have signed anti waste dump conventions such as the 1985 Rarotonga Treaty, which was signed by all the nations of the South Pacific Forum. In September 1995, the Waigani Convention was adopted and opened for signature by the South Pacific Forum. The Convention lays down a ban on the imports of hazardous waste and was meant to improve regionally the existing 1989 Basel Convention (controlling transboundary movements of hazardous waste). At that time, radioactive waste was excluded from the Basel Convention. (Information from Laka Foundation, 25 September 2003)

None of the previously mentioned proposals have become reality. Climate change concerns have added an extra argument against the idea to realize a nuclear waste dump in the Pacific. Most island will be vulnerable to damage due to rising sea levels in the coming decades.

FRENCH ENERGY DEBATE: WISE MEN'S COMMITTEE REPORT

Some months after the end of the official French debate on energy policy, a "Comité des Sages" (Wise Men's Committee) presented its conclusions on September 12.(1) The Wise Men's Committee was set up to monitor the energy debate, which was held in the beginning of 2003. The members could not reach consensus on the future of nuclear energy and drew their conclusions in two separate reports.

(593.5544) Réseau Sortir du Nucléaire / WISE Amsterdam – The committee consisted of engineer Pierre Castillon, journalist Mac Lesggy and philosopher/sociologist Edgar Morin. Morin came out with the separate report to express his doubts about new investments in nuclear energy: "because existing reactors won't be obsolete until 2020, because it is not sure that the European Pressurized Reactor (EPR) can be the solution for the future, because terrorism and climatic disorders made us discover new risks and weaknesses with nuclear energy, it appears useless to decide on a new EPR plant before 2010. The current uncertainty doesn't ensure that EPR, designed in the 1980s, would be the technology of the future. And this time can be used for reflection, to favor sustainable energies and to look for other types of solutions."(2) (3)

Morin is also worried that the official debate is used to justify a fixed energy program for the next decades, when an energy strategy should be more convenient to stay flexible in front of the unexpected.(4)

The two other reporters, Castillon and Lesggy were less firm: "The various, discordant, calendars [presented during the debate] didn't clearly demonstrate the urgency of building EPR. Nevertheless, all energy sources will be requested in the future and France must save its technological leadership with nuclear."(5) (6)

All three 'wise men' agreed that strong priority (with research and development) must be given to energy savings/efficiency (in housing and transports) and renewable energies (solar, wind, bio-mass) that are generating, except for hydro power, only 1% of electricity in France.

Next to their conclusions about the future of energy policy in France, the committee also reviewed the energy debate itself. About the official debate, the point of view of Morin is quite interesting for us. He recognizes that:

-it was a confidential debate because the political parties, the media and the public opinion didn't feel very much concerned;
-those who expressed themselves the most were mainly truckers and railway corporations; and also powerful oil and car lobbies;
-at the beginning, the internet site of the debates was too favorable to nuclear energy;
-the only echoes in the French society were the alternative debates initiated by ecological groups.(7)

Castillon and Lesggy concluded that information on nuclear safety and economics was incomplete and partly confusing during the debate. They said they regretted that the debate hadn't given sufficient treatment to the important issues of reprocessing, MOX fuel and plutonium management and complained that long-term nuclear waste policy "remains hostage to ideological quarrels".

In general, all 'wise men' lamented a lack of precise, quantitative information to support future decisions.(8)

...many anti-nuclear groups boycotted the official debate because they believed that the government had already made up its mind to build the EPR.

New EPR?
At the same day of the wise men's report, industry minister Nicole Fontaine told she will decide on a new EPR, at the latest, in the beginning of 2004: "to be able to integrate it in the new law on energy that is on the way".(9)

In the meantime, she asked Areva, Electricité de France (EDF), safety authorities and the Commissariat a l'Energie Atomique (CEA) to "complement our information". According to French news agency AFP she had asked "to deepen their reflections on the advantages of EPR in order to decide with clear elements".(10) (11)

In other words: "Please, convince me more; so that I can justify more easily your wishes in front of the population." It is not strange that many anti-nuclear groups boycotted the official debate because they believed that the government had already made up its mind to build the EPR.(12) (13)

New energy law
A new law on energy choices will be adopted before the end of this year. A draft law is expected this autumn and a final version be sent to the parliament before the end of the year. The new law will contain strategies on energy efficiency, diversification and the future share of each energy source. Measures would include tax incentives for renewables, efficiency standards for heating of new and existing buildings and an obligation for EDF to promote energy savings.(14) (15)

And the new EPR.....?

[This article was written by André Larivière of Réseau Sortir du nucléaire and editted by WISE Amsterdam]

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THE HISTORY OF ISRAEL'S NUCLEAR BOMB

Between 15 and 19 September, the General Conference of the IAEA was held. One of the agenda items was Israel and its nuclear weapons. Fifteen Arab countries submitted a resolution calling on Israel to sign the Non Proliferation Treaty (NPT) and submit its nuclear facilities to international safeguards. Developments in Iran and North Korea were also on the agenda of the Conference in Vienna. We previously gave backgrounds on the Iranian (1) and North Korean (2) weapons development and in this issue we describe the history of Israel's nuclear bomb.

(593.5545) WISE Amsterdam – On 12 September, the IAEA called on Iran to prove by 31 October that it had no secret nuclear weapons program. According to the 15 Arab states, Israel also has to be mentioned and be required to sign the NPT. Although Israel is a member of the IAEA it never signed the NPT, being one of the few countries in the world who didn't. Egypt proposed a further resolution calling for a nuclear-weapon-free-zone (NWFZ) in the Middle East.(3)

The resolution on Israel was not adopted, but the General Conference adopted the call for the NWFZ. It mentioned an urgent need for all states in the region to accept full scope safeguards for its nuclear facilities.(4)

Israel started developing nuclear weapons after the Second World War. Its production facilities are located at Dimona in the Negev Desert.

1940's-1950's

After establishment of the state of Israel in 1948, the country started to investigate the nuclear option. In 1949, the Hemed Gimmel, a special unit of the Israel Defense Force's Science Corps, began a two-year geological survey of the Negev Desert to discover uranium reserves. Although no significant sources were found, recoverable amounts were located in phosphate deposits.(5)

Close cooperation existed between Israeli and French research institutes. France had been a leading research center in nuclear physics before the Second World War, but had fallen far behind developments in the U.S., Soviet Union and the U.K. Israel and France were at a similar level of expertise and consequently the development of nuclear technology in both countries remained closely linked in the early 1950's. Israeli scientists for instance were involved in the construction of the (military) G-1 plutonium production reactor and the UP-1 reprocessing plant at Marcoule. In the 1950's and early 1960's, France was Israel's principal arms supplier and as instability spread in France's colonies in North Africa, Israel provided valuable intelligence obtained from those countries.(6)

The Israel Atomic Energy Commission was established in 1952. By that time, the Hemed Gimmel had been able to perfect the process to extract uranium found in Negev and was also able to produce heavy water for a research reactor.(7)

Israel choose for the option of heavy water for cooling/moderator and natural uranium as fuel. With normal light water it would need enriched uranium, which was too difficult to obtain. Heavy water reactors with natural uranium fuel are very capable for the production of plutonium.

Dimona

On 3 October 1957, France and Israel signed the agreement for the construction of a 24 MWth research reactor at Dimona (Hebrew for "imagination") in the Negev Desert. Besides, but not committed to paper, was the promise of France to build a chemical reprocessing plant. The complex was built in secret by French and Israeli technicians. French customs officials were told that certain components, such as the reactor tank, were part of a desalinization plant in Latin America. In addition, after buying heavy water from Norway on the condition that it not be transferred to a third country, the French Air Force secretly flew as much as four tons of it to Israel.

Trouble arose during construction in 1960 when France urged Israel to submit Dimona to international inspections in fear of a scandal when it would become clear that France had assisted Israel, especially concerning the reprocessing plant. Israel worked out a compromise. France would supply the uranium and components that were promised and would not insist on international inspections. Israel in return would assure France that they had no intention to make nuclear weapons.(8)

It was impossible to keep the reactor secret for the world. During construction in 1958, U-2 spy planes took pictures of the facility, but the U.S. did not identify it at that time as a nuclear reactor. It was variously explained as a textile factory, an agricultural station or a metallurgical research facility. Until Israeli Prime Minister Ben Gurion stated in December 1960 that Dimona was a nuclear research center for "peaceful purposes". It was too difficult to deny that the facility was something else than a reactor because of its characteristic dome shape.(9) (10)

Dimona went critical in 1964. French officials were surprised to discover that the cooling circuits were designed to support three times the original power level at its start (24 MWth). Without the addition of extra

cooling, a scale-up to 70 MWth was indeed done years later.

Next to the reactor and the underground reprocessing plant, Dimona also houses: a uranium processing facility, a waste treatment plant, a fuel fabrication facility, a laboratory and a depleted uranium bullets factory. It would also house a facility for uranium enrichment tests.(11)

Presently, the reactor has been 40 years in operation and is in a bad condition. Last year, former workers revealed to the media that there is a frightening absence of safety procedures and that workers got contaminated and had been exposed to high levels of radiation.(12)

Uranium
It has always been difficult for Israel to obtain uranium for the reactor because it did not sign the Non Proliferation Treaty (NPT). It had developed some capability of extracting uranium from phosphate ores at Dimona, but used also "Grey market" channels to fuel Dimona.

In 1965, up to 100 kilograms of high enriched uranium got missed from the U.S. Numec Corporation in Apollo, Pennsylvania. Because of other (non-)nuclear deals of the Numec chairman with Israel it was believed that the uranium had gone to Israel. Other reports however suggest that much of the missing uranium was recovered from floors and ventilation ducts when the facility was eventually decommissioned.(13) (14)

In 1968, a load of 200 tons of uranium (yellow cake) was hijacked (or simply delivered) from the German boat "Sheersberg A".(15)

Israel also cooperated with South Africa on nuclear technology. It seems to have started around 1967 and continued through the 1970's and 1980's. During that period, South Africa was a principal supplier of uranium for Dimona. There is possibly a role of Israel in a nuclear weapons test in the Indian Ocean (22 September 1979), which is believed to be a joint SA-Israel test.(16)

U.S. relations
Israel has close relations with the U.S. In 1955, when the contract for Dimona had not yet been signed, the U.S. agreed to sell a 5 MW swimming-pool research reactor to Nahal Soreq, south of Tel Aviv. But the U.S. forced Israel to accept safeguards because the U.S. supplied high enriched uranium fuel for the reactor.(17)

With the official announcement of 1960, that Israel had a reactor for "peaceful purposes", the relation between the U.S. and Israel was strained over the issue. In public, the U.S. accepted Israel's "peaceful purposes", but exerted pressure privately. After pressure, Israel finally committed to admit U.S. inspection teams once a year. These inspections took place between 1962 and 1969 but were in fact a big joke. Only aboveground parts of the facility were shown, whereas the reprocessing work took place at many levels underground. The aboveground areas had simulated control rooms and access to the underground rooms was hidden for the inspectors.(18)

The U.S. inspectors were able to report that there was no clear scientific research or civilian nuclear power program justifying such a large reactor but found no hard evidence of "weapons related activities" such as the existence of the plutonium reprocessing plant. In 1968 however the U.S. Central Intelligence Agency concluded that Israel had started producing nuclear weapons. This was based on information from Edward Teller, father of the U.S. hydrogen bomb. Teller had told the CIA that he had heard this from Israeli friends in the scientific and defense establishment. He told the CIA not to wait for an Israeli nuclear test to make a final assessment because that test would never be carried out.(19)

In 1981, the U.S. embargoed further shipments of high enriched uranium fuel to the Nahal Soreq reactor.(20)

Israeli sabotage
Israel conducted a number of sabotage actions in concern about Iraq's nuclear weapons development. In April 1979, the intelligence agency Mossad is believed to be responsible for two explosions at a construction yard in Seine sur Mer, France. Two research reactor cores destined for Iraq were seriously damaged.

In June 1980, Dr. Yahya Meshed was assassinated in Paris where he was negotiating a contract for Iraq to take over Iran's share of the French Eurodif enrichment plant. Already in 1978, unknown attackers tried to kill him when he was a technical liaison with France for the export of the Osiris research reactor.

Most famous sabotage by Israel is the bombing of the Tammuz-I research reactor at the Tuwaitha Nuclear Research Center near Baghdad. On 7 June 1980, aircraft bombing destroyed the 70 MWth reactor completely. According to Israel, Iraq was about to start producing plutonium in the reactor for the manufacture of a nuclear weapon.(21)

Recently, there were concerns expressed that Israel also wants to bomb Iranian nuclear facilities, such as the Busher NPP when Iran continues its construction with the help of Russia.(22)

Stockpile
After the opening of the Dimona reactor in 1964, it started producing plutonium. It is believed that the first two bombs were ready in 1967 at the time of the Six-Day War. In 1974, the CIA estimated that Israel had up to 20 nuclear bombs. By the late 1990's, U.S. intelligence organizations estimated that Israel possessed between 75 and 130 nuclear warheads. The warheads can be used in the Jericho missiles as well as bombs in aircraft.

Israel has never conducted a weapons test of its own, apart from the (believed) joint test with South Africa in 1979. However a sub-critical test (with no real nuclear explosion)

may have done in November 1966 at Al-Naqab in the Negev Desert.(23)

Nuclear alerts

During the Six-Day War (against Syria) in June 1967 the first two developed bombs may have been armed. It is also reported that, fearing defeat in the October 1973 Yom Kippur War (against Egypt and Syria), the Israeli army readied 13 bombs of 20 kilotons each for use. Missiles and aircraft were armed with the bombs for an attack on Egypt and Syrian targets.(24) (25)

During operation Desert Storm (U.S. strike against Iraq in 1991), Israel went on full scale nuclear alert when 7 Iraqi Scud missiles were fired at Israel. Only 3 missiles hit Tel Aviv and Haifa with minor damage. But the Israeli government warned Iraq with a counter strike if the Iraqis used chemical warheads, to mean that Israel intended to launch a nuclear strike if gas attacks occurred.(26)

Vanunu

In 1986, former Dimona worker Mordechai Vanunu revealed details of the Dimona plant to the London Sunday Times. The descriptions and photographs he made during his employment supported the conclusion that Israel had a stockpile of 100 to 200 nuclear warheads.(27)

Following his revelations, Vanunu fell into a trap by the Mossad and was kidnapped. In a closed door trial he was convicted to 18-year prison (in isolation). Recently it became known that on 22 April 2004 he will be released.(28)

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THE NUCLEAR MONITOR

The Nuclear Information & Resource Service was founded in 1978 and is based in Washington, DC. The World Information Service on Energy was set up the same year and is housed in Amsterdam, Netherlands. NIRS and WISE Amsterdam joined forces in 2000, creating a worldwide network of information and resource centers for citizens and environmental organizations concerned about nuclear power, radioactive waste, radiation, and sustainable energy.

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